State of California—Health and Human Services Agency
California Department of Public Health

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Director

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Re: Invitation for Your Participation in Enhanced Surveillance for Severe Pediatric Influenza Cases: 2007-08 Season

Dear Infection Control Practitioners, Hospital Epidemiologists and Pediatric Infectious Diseases Specialists/Chiefs,

The 2007-08 influenza season officially starts this week! Since December 2003, your local health department and the California Department of Public Health (CDPH) have conducted surveillance for Severe Pediatric Influenza cases that are either fatal or have required hospitalization in the pediatric intensive care unit (PICU). In this past 2006-07 season, a total of 66 cases, including 6 deaths, were reported from 18 hospitals. In comparison, 106, 32 and 124 cases were reported in 2005-06, 2004-05, and 2003-04, respectively. Why the numbers vary from season to season is unclear, underscoring how little we understand about influenza-associated morbidity and mortality in children. For these reasons, continued enhanced surveillance for severe pediatric influenza remains important.

CONTINUED SURVEILLANCE FOR SEVERE INFLUENZA IN CHILDREN

Your local county health department and CDPH would like to once again request your assistance with surveillance for severe pediatric influenza. Please monitor your hospital for cases meeting the following case definition and report them as quickly as possible to your local health department:

A. PEDIATRIC INFLUENZA CASES HOSPITALIZED IN THE PICU:

- Age 0- 17 years; AND
- A clinical syndrome consistent with influenza or its complications, including lower respiratory tract infection, acute respiratory distress syndrome, apnea, cardiopulmonary arrest, myocarditis, Reye or Reye-like Syndrome, or acute CNS syndrome (e.g., encephalitis, seizures); AND
- Confirmation by laboratory testing for influenza; AND
- Have been hospitalized in the ICU.

B. PEDIATRIC INFLUENZA-ASSOCIATED DEATHS:

- Age 0- 17 years; AND
- A fatal clinical syndrome consistent with influenza or its complications, including lower respiratory tract infection, acute respiratory distress syndrome, apnea, cardiopulmonary

arrest, myocarditis, Reye or Reye-like Syndrome, or acute CNS syndrome (e.g., encephalitis, seizures); AND
- Confirmation by laboratory testing for influenza; AND
- No period of complete recovery between the illness and death.
- Hospitalization or ICU care not required.

There are two associated case report forms that have been revised for 2007-08. For any case that is hospitalized in the PICU, please complete only the

1) Pediatric Severe Influenza Case History Form

For any deaths, please complete both the

1) Pediatric Severe Influenza Case History Form and
2) Pediatric Death Supplemental Form.

Please fax completed forms to your local health department [local health departments can forward this form to CDPH at fax 510-307-8599 (Attn: Erica Boston)]. After your notification, your clinical laboratory may receive a request to hold residual specimens for transport by courier to either your local public health laboratory or the State Viral and Rickettsial Disease Laboratory (arrangements will vary depending on your county).

REQUEST FOR TIMELY SPECIMENS

We continue to request clinical specimens from cases for further testing at your local public health laboratory and the State Viral and Rickettsial Disease Laboratory. We are interested in all cases, but especially those that occur in the early season, late season, or summertime (when the rapid influenza test is more likely to be falsely positive), or that present with atypical or unusually severe complications (e.g., encephalitis, myocarditis, multi-organ failure, etc). Our goals are to both better confirm influenza infection in these cases and to characterize any circulating influenza viruses by performing viral culture, strain typing, neutralization studies and testing for the presence of antiviral resistance. Laboratory characterization will be vital in detecting novel influenza viruses that first present in children.

With your help, last season we were able to collect residual (left-over) specimens and perform confirmatory testing in 36 cases. Polymerase chain reaction (PCR) testing in nine did not confirm influenza infection but did identify other agents in five cases, including rhinovirus (2), human metapneumovirus (1), parainfluenza virus (1), and RSV (1). Six cases had additional co-pathogens detected: RSV (4), adenovirus (1), human metapneumovirus (1), and one patient co-infected with both influenza A and B. Many specimens were difficult to grow in viral culture, either because there was too little volume or delays in transport affected quality of the specimen. Because viral growth is required for strain-typing, only eight specimens were eventually characterized. Of these eight, seven were strain-typed as A/H1/New Caledonia/20/99-like and one as A/H3/Wisconsin/67/2005; both strains were components of the 2006-07 influenza vaccine. Antiviral resistance testing was performed in seven cases; six (subtype H1) influenza viruses demonstrated sensitivity to both the adamantane and neuraminidase-inhibitor drugs and one (subtype H3) virus demonstrated resistance. All viruses were sensitive to neuraminidase inhibitor drugs.

Because of the challenges we experienced in culturing last season's influenza viruses, we were not able to provide strain typing or antiviral resistance testing results in a timely manner. However, the continued characterization of influenza viruses in the severe pediatric influenza cases remains an important goal; it provides epidemiologic and virologic information that may be useful in detecting the presence of novel influenza strains, and helps us to better understand antiviral resistance trends in influenza virus circulating throughout the state. This season, we will be experimenting with different methods of cell culture in order to improve the yield. In addition, your prompt notification will help us get clinical specimens saved and transported before they are discarded or degrade in quality. Depending on the local health department, in some cases specimens will be routed via the local public health laboratory and in other cases specimens will be routed straight to VRDL.

We are glad to have the assistance this season of Erica Boston (510 307-8503; erica.boston@cdph.ca.gov) to help coordinate case reporting, specimen collection and reporting of any laboratory findings to you. Updates about severe pediatric influenza cases occurring in California will be sent electronically throughout the respiratory season. As long as you remain on our Pediatric Influenza Surveillance List you will receive these updates. If you wish to be removed from this list please notify Janice Louie at janice.louie@cdph.ca.gov.

Our ability to monitor severe pediatric influenza reflects the hard work of you and your colleagues. Thank you in advance for your participation. We hope this information will be of shared benefit.

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